

ABSTRACT OF THE DISCLOSURES

A virtual machine with a stack architecture includes: a stack 120 whose top level (TOS) and the second level from the top (SOS) are mapped to registers of a real machine 201; an instruction storing unit 102 for storing a virtual machine instruction sequence to be executed; next instruction information storing unit 101 for storing a plurality of sets of next instruction information that are each associated with a different virtual machine instruction in the virtual machine instruction sequence, the set of next instruction information for a given virtual machine instruction indicating a change in a number of sets of data stored in the stack 120 due to execution of a virtual machine instruction executed after the given virtual machine instruction; a decoding unit 103 for decoding a virtual machine instruction and an associated set of next instruction information after reading them from the instruction storing unit 102 and the next instruction information storing unit 101; and an executing unit 110 for executing the decoded virtual machine instruction and performing a stack handling in the stack 120 in advance for a virtual machine instruction that is to be executed next based on the set of next instruction information.